

$$\begin{array}{r} x^3 + 1x^2 - 1x + 1 \mid x-1 \\ -x^3 + x^2 \\ \hline 0x^3 + 0x^2 - 1x + 1 \\ -(-x^2 + x - 1) \\ \hline 0x^3 + 0x^2 + 0x + 0 \end{array}$$

$$D_f = R - \left\{ -\frac{4}{5} \text{ و } \frac{1}{5} \text{ و } 1 \right\}$$

$$\begin{array}{r} x^3 + 9x^2 + 10x + 1 \mid x+1 \\ -x^3 - 9x^2 - 10x - 1 \\ \hline 0x^3 + 18x^2 + 20x + 2 \\ -18x^2 - 18x - 18 \\ \hline 0x^3 + 0x^2 + 8x + 20 \\ -8x^2 - 8x - 8 \\ \hline 0x^3 + 0x^2 + 0x + 12 \end{array}$$

$$D_f = R - \left\{ -1 \text{ و } -\frac{1}{5} \text{ و } -\frac{3}{5} \right\}$$

$$\frac{x^3 - 1x^2 + 1x - 1}{x^2 - x + 1} \mid x-1$$

$$\frac{(x-1)(x^2 - x + 1)}{x+1} \quad \Delta < 0$$

$$D_f = R - \{1\}$$

$$y = \sqrt{\frac{x+1}{(x-1)(x^2-x+1)}} \rightarrow x = 1 \text{ و } -3$$

$$\begin{array}{c} -3 \quad 1 \\ | \quad | \\ + \quad - \quad + \end{array}$$

$$D_f = R - (-3 \text{ و } 1] \cup (-\infty \text{ و } -3) \cup (1 \text{ و } \infty)$$

$$x \geq 1 \rightarrow x^2 - 1(x-1) - 1x + 1$$

$$x^2 - 1x + 1 - 1x + 1 =$$

$$x^2 - 2x + 2 =$$

$$(x-1)(x-1) =$$

$$x \neq 1 \text{ و } 2$$

$$x \leq 1 \rightarrow x^2 - 1(-x+1) - 1x + 1 \neq 0$$

$$x^2 + 1x - 1 - 1x + 1 \neq 0$$

$$x^2 + 1x - 1x \neq 0$$

$$x^2 - 1x \neq 0$$

$$\rightarrow x \neq 0 \text{ و } 1$$

$$D_f = R - \{1 \text{ و } 2 \text{ و } 0 \text{ و } -1\}$$

$$[-x] \geq 1 \quad -x \geq 1 \quad x \leq -1$$

$$D_f = (-\infty \text{ و } -1]$$

$$[x]^2 - 1[x] - 1$$

$$([x]+1)([x]-1) \neq 0$$

$$[x] \neq -1 \quad [x] \neq 1$$

$$x \notin [-1, 0) \quad x \notin [1, 2)$$

$$D_f = R - ([-1, 0) \cup [1, 2))$$

$$1) y = \sqrt{\left[x + \frac{1}{x} - 1\right] + \left[x + \frac{1}{x}\right]}$$

$$y = \sqrt{\left[x + \frac{1}{x}\right] - 1 + \left[x + \frac{1}{x}\right]} \quad D_f = \left[\frac{1}{x} \text{ و } \infty\right)$$

$$1 \leq \left[x + \frac{1}{x}\right] \quad \left[x + \frac{1}{x}\right] \geq \frac{1}{x}$$

$$x + \frac{1}{x} \geq 1 \rightarrow x \geq \frac{1}{x}$$

$$y = \sqrt{\left[x - \frac{1}{x}\right] + \left[\frac{1}{x} - x\right]}$$

$$y = \sqrt{\left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right]}$$

$$\text{if } \begin{cases} a \in \mathbb{Z} & [a] + [-a] = 0 \\ a \notin \mathbb{Z} & [a] + [-a] = -1 \end{cases}$$

$$x - \frac{1}{x} \in \mathbb{Z}$$

$$D_f = \left\{ x \mid x = k + \frac{1}{x} \text{ و } k \in \mathbb{Z} \right\}$$

$$\frac{\cos x}{\sin x} + 1 \quad \tan x \neq -1$$

$$\frac{\sin x}{\cos x} + 1 \quad \sin x \neq 0$$

$$\cos x \neq 0$$


$$D_f = \mathbb{R} - \left\{ \frac{k\pi}{r} \text{ و } k\pi - \frac{\pi}{\varepsilon} \right\}$$

الف)

$$ب) 1 - r \sin u \geq 0$$

$$\sin^2 u \leq \frac{1}{\varepsilon} \rightarrow -\frac{1}{r} \leq \sin u \leq \frac{1}{r}$$

$$D_f = \left[rk\pi - \frac{\pi}{4}, rk\pi + \frac{\pi}{4} \right] \cup \left[rk\pi + \frac{3\pi}{4}, rk\pi + \frac{5\pi}{4} \right]$$

$$الف) \sin u - 1 \geq 0 \quad \sin u \geq \frac{1}{r}$$

$$D_f = \left[rk\pi + \frac{\pi}{4}, rk\pi + \frac{3\pi}{4} \right]$$



$$ب) 1 - r \cos u \geq 0 \quad \cos u \leq \frac{1}{r}$$



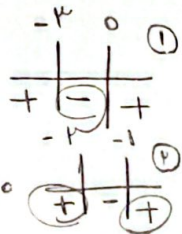
$$D_f = \left[rk\pi + \frac{\pi}{r}, rk\pi + \frac{2\pi}{r} \right]$$

$$الف) -1 \leq x^2 + 3x + 1 \leq 1$$

$$x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0$$

$$0 \leq x^2 + 3x + 1 \rightarrow (x+1)(x+2) \geq 0$$

$$IN \rightarrow [-3, -2] \cup [-1, 0]$$



$$0 \leq \sqrt{a - 2x} \leq 1 \rightarrow 0 \leq a - 2x \leq 1$$

$$a - 2x \leq -\varepsilon \quad a \geq 2x \geq \varepsilon$$

$$\frac{a}{2} \geq x \geq \frac{\varepsilon}{2} \rightarrow D_f = \left[\frac{\varepsilon}{2}, \frac{a}{2} \right]$$

$$الف) x > 0$$

$$1 - \log_{\frac{1}{r}} x > 0$$

$$\log_{\frac{1}{r}} x < 1$$

$$x < r$$

$$\hookrightarrow D_f = (0, r)$$

$$ب) x > 0$$

$$1 - \log_{\frac{1}{r}} x > 0$$

$$\log_{\frac{1}{r}} x < 1 \quad x < \frac{1}{r}$$

$$D_f = \left(0, \frac{1}{r} \right)$$

$$rx - x^2 \geq k$$

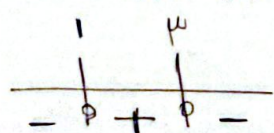
$$rx - x^2 \geq \mu$$

$$-x^2 + \varepsilon x - \mu \geq 0$$

$$-(x^2 - \varepsilon x + \mu) \geq 0$$

$$-(x-1)(x-\mu) \geq 0$$

$$D_f = [1, \mu]$$



$$ب) \frac{rk + d}{rk + \varepsilon} \in \mathbb{N}$$

$$\rightarrow x = \frac{-rk + d}{rk - \mu}$$

$$D_f = \left\{ x \mid x = \frac{-rk + d}{rk - \mu} \text{ و } k \in \mathbb{N} \right\}$$